IN THE DRAWINGS:

Attached please find Replacement Sheets for Figures 11, 13 and 15-22.

REMARKS

This Amendment responds to the Office Action dated February 9, 2006 in which the Examiner objected to the disclosure and drawings, rejected claims 4 and 14 under 35 U.S.C. §112, second paragraph, rejected claim 9 under 35 U.S.C. §101, rejected claims 1, 6, 8 and 10 under 35 U.S.C. §102(e) and rejected claims 2-5, 7, 9 and 11-14 under 35 U.S.C. §103.

Attached to this Amendment is a copy of the Information Disclosure Statement filed April 1, 2002 along with a stamped copy of the postcard indicating that a copy of the reference to *Floyd* was attached. Another copy of *Floyd* along with the previously filed Information Disclosure Statement is attached. Applicant respectfully requests the Examiner consider the reference since it was properly attached as indicated by the stamped postcard to the Information Disclosure Statement filed April 1, 2002.

As indicated above, a minor informality in the specification has been corrected. Therefore, Applicant respectfully requests the Examiner withdraws the objection to the specification.

As indicated above, Figures 11, 13 and 15-22 have been amended. Therefore, Applicant respectfully requests the Examiner withdraws the objection to the drawings.

Applicant respectfully points out to the Examiner that claims 1, 6 and 10 have been amended to make explicit what is implicit in the claims. Therefore, Applicant respectfully submits that proper antecedent basis is provided in claims 4 and 14. Therefore, Applicant respectfully requests the Examiner withdraws the rejection to claims 4 and 14 under 35 U.S.C. §112, second paragraph.

As indicated above, claims 4, 5, 13 and 14 have been amended for dependency. The amendment is unrelated to a statutory requirement for patentability and does not narrow the literal scope of the claims.

As indicated above, claims 1, 6 and 10 have been amended in order to make explicit what is implicit in the claims. The amendment is unrelated to a statutory requirement for patentability.

As indicated above, claim 9 has been cancelled without prejudice. Therefore, Applicant respectfully requests the Examiner withdraws the rejection to claim 9 under 35 U.S.C. §101 and 35 U.S.C. §103.

Claims 1, 6 and 10 claim an image processing apparatus and method in which an error diffusion processing is performed using a threshold value. In claims 1 and 10, error diffusion processing uses a threshold value in a binarization process smaller than a central value and does not perform calculation of error and distribution of the error for the white pixel. In claim 6, the error diffusion processing is performed using a threshold value in a binarization process higher than a central value and does not perform calculation of error and distribution of the error for the black pixel.

Through the method and apparatus using a threshold value which is either smaller or larger than a central value and performing the error calculation based upon the input signal, as claimed in claims 1, 6 and 10, the claimed invention provides an image processing apparatus which enables high speed image processing without degrading image quality. The prior art does not show, teach or suggest the invention as claimed in claims 1, 6 and 10.

Claims 1, 6 and 10 were rejected under 35 U.S.C. §102(e) as being anticipated by *Ishiguro et al.* (U.S. Patent No. 6,501,566).

Ishiguro et al. appears to disclose an image processing apparatus employing a multi-value error diffusion process. (Column 1, lines 9-10). An error diffusion process is carried out, if necessary, by error diffusion processing unit 106-07. In the error diffusion process, pixel density D of the image data output from MTF correction unit 106-06 and a reference density S output from control unit 106-12 are used. Converted pixel density P of the image data subjected to an error diffusion process is output from error diffusion processing unit 106-07. (Column 6, lines 23-30). FIG. 3 is a block diagram showing a structure of error diffusion processing unit 106-07 of FIG. 2. Referring to FIG. 3, an error diffusion processing unit 106-07 includes an adder 41, a tone convertor 42, a subtractor 43, an error addition matrix 44, an error memory 45, and an address counter 46. The function of respective blocks is similar to those described with reference to FIG. 10. Only differing portions will be described hereinafter. FIG. 4 is a block diagram of tone convertor 42. Referring to FIG. 4, tone convertor 42 includes average value circuits AVE1-AVE3, comparators CP1-CP3, a data selector SEL, and an encoder ENC. A reference density S is applied to each of average value circuits AVE1-AVE3 and data selector SEL. Reference density S is formed of reference densities S0-S3. Average value circuit AVE1 receives reference densities S0 and S1 to output the average value thereof as a threshold value T1. Average value circuit AVE2 receives reference densities S1 and S2 to output the average value thereof as a threshold value T2. Average value circuit AVE3 receives reference densities S2 and S3 to output the average value thereof as a threshold value T3. (Column 6, lines 38-63). The image processing apparatus of the present embodiment is characterized in that the values of reference densities S1 and S2 are altered according to the density histogram of the input image data. (Column 7, lines

13-16). Reference densities S1 and S2 set as described above and S0 (=0) and S3 (=255) which are the lower limit value and upper limit value, respectively, of the density value are applied to average value circuits AVE1-AVE3 and data selector SEL as shown in FIG. 4. Threshold values T1-T3 are calculated by averaging the reference densities in average value circuits AVE1-AVE3. According to threshold values T1-T3, corrected pixel density D' is compared in comparators CP1-CP3. The result of the comparison is provided to encoder ENC. FIG. 8 is a list showing the relationship of corrected pixel density D', converted pixel density P output from encoder ENC, output Ti of data selector SEL, and error E output from subtractor 43 of the pixel of interest when reference density S1 is 85 and reference density S2 is 170. Referring to FIG. 8, the threshold values are T1=42, T2=127, and T3=212 since the reference densities are S0=0, S1=85, S2=170, and S3=255. Therefore, converted pixel density P is 00 when corrected pixel density D' is 0.about.41. Here, the value of SO, i.e., 0, is provided as output Ti of data selector SEL. Therefore, error E output from subtractor 43 is D'-0. (Column 8, lines 31-52).

Thus, *Ishiguro et al.* merely discloses at column 6, lines 55-57, that the average value circuit receives reference values S0 and S1 to output the average value threshold as a threshold value T1 and further shown in Figure 7 that T1 is the central value of a reference density S0 and S1. In other words, *Ishiguro et al.* discloses that in the range in which certain binarization is performed, i.e., the range between S0 and S1, the threshold value is the central value. Thus, nothing in *Ishiguro et al.* shows, teaches or suggests a) using a threshold value in a binarization process which is smaller than a central value of possible values as claimed in claims 1 and 10 or b) using a threshold value in a binarization process

larger than a central value of possible values as claimed in claim 6. Rather, *Ishiguro et al.* teaches away from the claimed invention and merely discloses outputting the average value as a threshold value.

Applicant respectfully submits that using a threshold value in a binarization process smaller or larger than a central value, as claimed in claims 1, 6 and 10, eliminates delay in dot generation which is resultant from reset of an error memory. Nothing in *Ishiguro et al.* shows, teaches or suggests solving this problem or the essential features as claimed in claims 1, 6 and 10.

Furthermore, *Ishiguro et al.* merely discloses that the values of reference densities S1 and S2 are altered according to a density histogram of input image data. Nothing in *Ishiguro et al.* shows, teaches or suggests performing calculation and distribution of error based upon a pixel representation (i.e., white or black pixel) as claimed in claims 1, 6 and 10.

Since nothing in *Ishiguro et al.* shows, teaches or suggests the primary features as claimed in claims 1, 6 and 10 as discussed above, Applicant respectfully requests the Examiner withdraws the rejection to claims 1, 6 and 10 under 35 U.S.C. §102(e).

Claims 2-5, 7 and 11-14 were rejected under 35 U.S.C. §103 as unpatentable over *Ishiguro et al.* in view of design choice.

Applicant respectfully traverses the Examiner's rejection of the claims under 35 U.S.C. §103. The claims have been reviewed in light of the Office Action, and for reasons which are set forth below, Applicant respectfully requests the Examiner withdraws the rejection to the claims and allows the claims to issue.

Claims 4-5 and 13-14 depend from claims 1 and 10 and recite additional features. Applicant respectfully submits that claims 4-5 and 13-14 would not have been obvious over *Ishiguro et al.* and engineering design choice within the meaning of 35 U.S.C. §103 at least for the reasons as set forth above. Therefore, Applicant respectfully requests the Examiner withdraws the rejection to claims 4-5 and 13-14 under 35 U.S.C. §103.

New claims 15-17 have been added. Applicant respectfully submits that these claims are also in condition for allowance at least for the reasons as set forth above. Therefore, Applicant respectfully requests the Examiner allows new claims 15-17.

The prior art of record, which is not relied upon, is acknowledged. The references taken singularly or in combination do not anticipate or make obvious the claimed invention.

Thus, it now appears that the application is in condition for reconsideration and allowance. Reconsideration and allowance at an early date are respectfully requested.

If for any reason the Examiner feels that the application is not now in condition for allowance, the Examiner is requested to contact, by telephone, the Applicant's undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed within the currently set shortened statutory period, Applicant respectfully petitions for an appropriate extension of time. The fees for such extension of time may be charged to Deposit Account No. 02-4800.

In the event that any additional fees are due with this paper, please charge our Deposit Account No. 02-4800.

Respectfully submitted,

BUCHANAN INGERSOLL PC

Date: May 9, 2006

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